

IUPUI-SPEA
SOLID AND HAZARDOUS WASTE
MANAGEMENT E452/E562
Fall 2005

Time: 5:45 – 8:25 PM
Tuesday

Instructors: Rosemary Cantwell (317/844-8046)
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COURSE FORMAT: The course will consist of lectures and discussions on solid and hazardous waste topics to provide a broad base of information for environmental specialists. **There is no required solid waste test.** For reference purposes or a supplemental text to class material “Integrated Solid Waste Management, Engineering Principles and Management Issues” by Tchobanoglous/Theisen/Vigil is suggested. Several copies should be in the library. **The hazardous waste text is “RCRA Orientation Manual” by USEPA and can be ordered or downloaded from www.epa.gov/rcraonline.** In addition, various handouts will be provided for the student’s reference and clarification of course material. **Students will be responsible for all material presented, class handouts, and specific references to text material.**

PURPOSE OF COURSE: To provide the student with basic information and understanding necessary to perform beginning level work in the environmental industry or governmental agencies which are involved in the management of solid waste and/or hazardous waste.

Some of the course objectives are:

1. To provide the student with a broad knowledge base of solid and hazardous waste information and regulatory requirements;
2. To provide the student with a comprehension of the complexity of problems, issues, and practices in the management of solid and hazardous waste;
3. To encourage the student to perceive the necessity to better manage solid and hazardous waste; and
4. To provide the student with information to understand and explain various methods of waste management, including the storage, treatment, processing, and disposal of solid and hazardous waste.

IUPUI has made a commitment to ensuring that each student’s education is linked by core principles of learning. The activities in this course – lecture, reading, research, projects, assignments, and exams – are linked to the following core principles:

1. **Core Communication and Quantitative Skills** – The project, assignments, and discussion portion of some exams will develop the student’s writing and research skills. Classroom discussion and project presentation will help develop student’s ability to communicate both verbally and in writing. Some homework assignments and exams will require problem-solving skills using basic math skills and analytical thinking.
2. **Critical Thinking** – While preparing and completing assignments and projects, students will be required to analyze and synthesize information about complex solid and hazardous waste management issues using intermediate and advanced levels of competence. Students will be required to use knowledge and understanding in order to generate and explore new questions and new ideas. Specifically, the hazardous waste project will require the student to use the information learned in class to formulate critical questions, creative ideas and potential solutions. Questions, ideas and solutions will then be manipulated and transformed into an environmental audit that may be utilized at a manufacturing site.
3. **Intellectual Depth** – Students will be required to develop intellectual depth in solid and hazardous waste management by learning and utilizing very specific advanced skills such as conducting waste determinations through analyzing data, interpreting material safety data sheets and other such methods of knowledge. Both graduate and undergraduate

students are required to prepare a detailed environmental audit using all the tools, skills, and information learned in class. Graduate students will be required to audit a company using the prepared questionnaire and present audit findings to the class.

4. **Values and Ethics** – Students will be challenged to make value judgements about environmental issues and to examine personal choices. For example, is it better to live near a solid waste landfill, a hazardous waste landfill or a large manufacturing industry and why.

EVALUATION: Undergraduate E452

2 – 100 point exams (solid waste)
 2 - 50 point exams (hazardous waste)
 50 points (hazardous waste assignment)
 _____50 points (hazardous waste audit project)
 400 points total

Grading scale for undergraduates:

A+ = 394 - 400 pts.	A = 360 - 393 pts.	A- = 356 - 359 pts.	
B+ = 348 - 355 pts.	B = 320 - 347 pts.	B- = 316 - 319 pts.	
C+ = 308 - 315 pts.	C = 280 - 307 pts.	C- = 276 - 279 pts.	
D+ = 268 - 275 pts.	D = 240 - 267 pts.	D- = 236 - 239 pts.	F = below 236

EVALUATION: Graduate E562

2 – 100 point exams (solid waste)
 2 - 50 point exams (hazardous waste)
 50 points (solid waste assignments)
 50 points (hazardous waste assignment)
 _____100 points (hazardous waste audit and facility presentation project)
 500 points total

Grading scale for graduates:

A+ = 492 - 500 pts.	A = 451 - 491 pts.	A- = 445 - 450 pts.	
B+ = 435 - 444 pts.	B = 401 - 434 pts.	B- = 395 - 400 pts.	
C+ = 385 - 394 pts.	C = 351 - 384 pts.	C- = 345 - 350 pts.	
D+ = 335 - 344 pts.	D = 301 - 334 pts.	D- = 295 - 300 pts.	F = below 300

HAZARDOUS WASTE

DATE

COUSE OUTLINE TOPIC

READING REF

8/30/05

Introduction to RCRA: Hazardous Waste

ExecutiveSummary -

Hazardous Waste Audit Project Assigned

ES-1 to ES-4;
Section I, I-1 to I-9;
Section III - Chapter 11,
pages III-137 to III-143;
Section VI - Overview and
Chapter 2, pages VI-1,2
pages VI-9 to 14
Appendix G

9/6/05	Definition of Hazardous Waste: Waste Determinations Waste Determination (WD) Assignment Given	Section III - Chapter 1
9/13/05	Management Requirements for Generators Hazardous Waste WD Assignment Due	Section III - Chapter 3, pages III-39 to III-47; Section III - Chapter 6, pages III-89 to III-98; Appendix A, B
9/20/05	Exam #1 ; Management Requirements for Transporters and TSD Facilities	Section III - Chapter 4, pages III-49 to III-51; Section III - Chapter 5, pages III-53 to III-60
9/27/05	General Requirements for TSD Facilities	Section III - Chapter 5, pages III-75 to III-87; Section III - Chapter 9, pages III-121 to III-126
10/4/05	Permitting Process; Specific Standards for TSD Facilities	Section III - Chapter 5, pages III-60 to III-75; Section III - Chapter 8, pages III-109 to III-120
10/11/05	Permitting Standards for TSD Facilities	Section III - Chapter 5, pages III-60 to III-75; Section III - Chapter 7, pages III-99 to III-108
10/18/05	Hazardous Waste Facility Presentation Hazardous Waste Audit Project Due	
10/25/05	Exam #2	

SOLID WASTE

<u>DATE</u>	<u>COUSE OUTLINE TOPIC</u>	<u>SUGGESTED REFERENCE</u>
11/1/05	Solid Waste Introduction; Why Be Concerned? Laws and Regulations	Ch. 1, 2

11/8/05	Legislation/Impacts; Characteristics of Solid Waste Graduate Assignment #1 Due	Ch. 2, 3, 6
11/15/05	Source Reduction; Transfer Stations, Recycling Graduate Assignment #2 Due	Ch. 6, 9, 10
11/22/05	Composting; Incineration; EXAM #3 Graduate Assignment #3 Due	Ch. 9
11/29/05	Sanitary Landfill Graduate Assignment #4 Due	Ch. 11
12/6/05	Sanitary Landfill Graduate Assignment #5 Due	Ch. 11
To Be Announced	Exam #4	